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On 10/19/05  
(Date)

  
Julie H. Gamotis

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

FRAAS et al.

Serial No. 08/835,419

Art Unit: 1764

Filed: April 9, 1997

Examiner: Alexa Neckel

For: PRETREATMENT PROCESS TO REMOVE OXYGEN FROM COAL EN ROUTE TO  
A COAL PYROLYSIS PROCESS AS A MEANS OF IMPROVING THE QUALITY  
OF THE HYDROCARBON LIQUID PRODUCT

**RESPONSE**

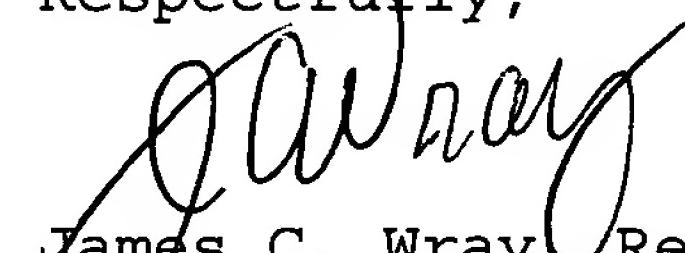
To the Commissioner of Patents and Trademarks

Sir:

In response to the attached Notice Regarding Drawings dated August 25, 2005, kindly accept the attached formal drawings for Figures 1-12 and Tables 1 and 2 for the above-identified application.

Since all requirements have now been met, it is requested that this application be passed to publication.

Respectfully,



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**TABLE 1** Identification of the molecular species shown in  
the mass spectrograph of Fig. 8. (Courtesy of NREL.)

Peak #	Ret Time	Type	Width	Area	Start Time	End Time
1	3.222	BB	0.048	30393316	3.171	3.361
2	14.154	BB	0.076	313283607	13.912	14.317
3	16.767	BV	0.062	226782918	16.512	16.852
4	17.528	BV	0.099	645315429	17.192	17.740
5	18.514	VB	0.069	48860748	18.440	18.701
6	19.588	BV	0.082	59120967	19.406	19.753
7	19.936	PV	0.098	322802782	19.753	20.065
8	20.590	BB	0.104	331638422	20.341	20.739
9	20.873	BB	0.060	36879860	20.772	21.948
10	21.099	BV	0.059	33990136	21.040	21.184
11	21.356	PV	0.077	90845735	21.184	21.417
12	21.527	VV	0.151	136310629	21.417	21.668
13	22.439	BV	0.076	64112416	22.333	22.510
14	22.758	PV	0.062	68611382	22.634	22.829
15	23.412	BV	0.138	240115887	23.019	23.553
16	23.646	VV	0.079	47741586	23.553	23.712
17	24.320	VV	0.170	207909906	24.069	24.458
18	24.538	VV	0.076	79325325	24.458	24.605
19	24.653	VV	0.055	38565908	24.605	24.742
20	25.046	PV	0.125	118270515	24.742	25.117
21	25.793	PV	0.094	59603420	25.659	25.871
22	26.991	BV	0.147	111756150	26.665	27.083
23	27.478	VV	0.071	74153041	27.310	27.554
24	28.217	VV	0.155	111996448	28.057	28.318
25	29.150	PB	0.126	79288182	28.893	29.272
26	30.134	VV	0.066	71278688	29.984	30.291
27	30.411	PV	0.092	38697487	30.291	30.500
28	32.644	VV	0.067	70995925	32.585	32.800
29	33.055	VV	0.131	89973356	32.800	33.126
30	33.815	PV	0.146	99261970	33.420	33.917
31	35.017	BV	0.076	72696374	34.649	35.080
32	35.165	VV	0.068	58509299	35.080	35.250
33	35.991	PB	0.126	66195337	35.818	36.125
34	37.268	VV	0.077	49827041	37.184	37.419
35	38.913	PV	0.096	44028359	38.654	38.954
36	39.013	VV	0.083	65757311	38.954	39.111
37	39.243	VV	0.108	41825527	39.111	39.323
38	39.407	VV	0.078	31700091	39.323	39.464
39	39.576	VV	0.206	82404413	39.464	39.804
40	40.336	VV	0.076	99687158	40.176	40.503
41	40.790	PV	0.125	67313401	40.614	40.882
42	40.949	VV	0.094	50579033	40.882	41.001
43	41.074	VV	0.100	52058420	41.001	41.130
44	41.411	VV	0.075	94054622	41.305	41.535
45	42.054	PV	0.189	136427968	41.639	42.185
46	42.324	VB	0.085	94923542	42.185	42.528
47	43.116	VV	0.090	163284484	42.861	43.181
48	43.301	VV	0.114	64892843	43.181	43.410
49	43.630	PV	0.115	37686533	43.410	43.684
50	43.830	VV	0.078	137793990	43.684	43.939
51	43.996	VV	0.084	32775013	43.939	44.036
52	44.107	VV	0.097	48161669	44.036	44.164
53	44.260	VV	0.084	54499174	44.164	44.318
54	44.481	VV	0.065	114007997	44.318	44.560
55	44.871	VV	0.095	46641140	44.795	44.966
56	45.083	VV	0.050	74068060	44.966	45.161

## Table 2

NREL Analysis of Gas Sample from Flask No. 3  
of Glass System Pyrolysis Test No. 5 of 9 - 6 - 96

Gas	Percent	ppm	Vapor Press. mm,H <sub>3</sub> @ °C
N <sub>2</sub>	90	900,000	
CH <sub>4</sub>	3.5	35,000	
H <sub>2</sub>	1.8	18,000	
CO	0.4	4,000	
CO <sub>2</sub>	1.7	17,000	
Ethane	0.7	7,000	600
Ethylene	0.2	2,000	-94
Propane	0.2	2,000	600
Propylene	0.16	1,600	-48
n Butane	0.09	900	900
I Butene	0.03	300	3.8
iso Butene	0.02	200	
cis2 Butene	0.03	300	
trans 2 Butene	0.06	600	
n Pentane	0.05	500	200
iso Pentane	0.01	100	200
			-5